

Claims:

1. An irrigation system comprising a reservoir (1) for irrigating liquid, a probe (3) for arrangement in a user, conduit means (6,7,10,11) for conducting the irrigating fluid from the reservoir to the probe, and a fixation member (5) for fixation of the probe in the user, c h a r a c t e r i z e d in that pumping means (9) are provided for pumping gas into the reservoir (1) to transfer the irrigating liquid from the reservoir (1) to the probe (3), that the fixation member includes an inflatable cuff (5), and that the system includes a control unit (8;108;208;308) which may be set in at least a cuff inflating position and a liquid transferring position.
2. An irrigation system as claimed in claim 1, in which the control unit (8;108;208;308) comprises at least two elements (120,121,122;220,222;320,322) that may be moved with respect to each other into at least said cuff inflating and liquid transferring positions.
3. An irrigation system as claimed in any one of claims 1 and 2, in which said conduit means includes a first part (6,7) connecting the control unit (8) with the probe (3) and a second part (10,11) connecting the reservoir (1) with the control unit (8), and in which each of said first and second parts comprises a gas conducting tube (6,10) and an irrigating liquid conducting tube (7,11).
4. An irrigation system as claimed in any one of claims 1 and 2, in which said conduit means includes an irrigating liquid conducting tube connecting the reservoir with the probe, and at least one gas conducting tube connecting the control unit with the reservoir.
5. An irrigation system as claimed in any one of the preceding claims, in which the irrigation system furthermore comprises a separate container containing an inflating medium.
6. An irrigation system as claimed in any one of claims 1 to 5, in which the control unit (8;108;208;308) may be set in a first position corresponding to an inactive

position, a second position corresponding to said liquid transferring position and in which gas is pumped into the reservoir and irrigating liquid is transferred from the reservoir to the probe, and a third position corresponding to said cuff inflating position and in which gas is pumped into the inflatable cuff.

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7. An irrigation system as claimed in any one of claims 2 to 6, in which said control unit (108) comprises a first disc (120) connected with at least an irrigating liquid tube connecting the control unit with the probe, a second disc (121) connected with at least an irrigating liquid tube connecting the reservoir with the
10 control unit, and an intermediate disc (122) positioned between and being rotatable about an axis of rotation (123) with respect to the first and second discs (120,121), and in which said intermediate disc (122) may be set in at least said cuff inflating and liquid transferring positions.

15 8. An irrigation system as claimed in claim 7 when dependent on claim 6, in which the first disc (120) includes a first through-going cavity (126) at a first distance from said axis of rotation and a second through-going cavity (127) at a second distance from said axis of rotation, in which the second disc (121) includes a first through-going cavity (128) at said first distance from said axis of
20 rotation, a second through-going cavity (129) at said second distance from said axis of rotation and a third through-going cavity (130) at a third distance from said axis of rotation, and in which the intermediate disc (122) along a first line (A1) extending from said axis of rotation (123) towards the periphery of the intermediate disc (122) has a through-going cavity (131) at said second distance
25 from the axis of rotation and an oblong recess (132) extending from said through-going cavity (131) to the periphery of the intermediate disc, and along a second line (A2) extending at an angle with respect to said first line (A1) from said axis of rotation (123) towards the periphery of the intermediate disc has a through-going cavity (133) at said first distance from the axis of rotation and an oblong recess
30 (134) opening towards said second disc (121) and extending substantially over a distance corresponding to the second and third through-going cavities (129,130) in the second disc (121), and along a third line (A3) extending at an angle with

respect to said second line (A2) from said axis of rotation (123) towards the periphery of the intermediate disc has a through-going cavity (135) at said second distance from the axis of rotation.

- 5 9. An irrigation system as claimed in claim 8, in which the conduit means includes a first part connecting the control unit with the probe and a second part connecting the reservoir with the control unit, each of said first and second parts comprising a gas conducting tube and an irrigating liquid conducting tube, in which the gas conducting tube of the first part of the conduit means is connected
10 with the second through-going cavity (127) of the first disc (120) and the irrigating liquid conducting tube of the first part is connected with the first through-going cavity (126) of the first disc, in which the gas conducting tube of the second part of the conduit means is connected with the third through-going cavity (130) of the second disc (121) and the irrigating liquid conducting tube of the second part is
15 connected with the first through-going cavity (128) of the second disc, and in which the pumping means is connected with the second through-going cavity (129) of the second disc.

10. An irrigation system as claimed in any one of claims 8 and 9, in which the
20 intermediate disc (122) along a fourth line (A4) extending at an angle with respect to said third line (A3) from said axis of rotation (123) towards the periphery of the intermediate disc has a through-going cavity (136) at said first distance from the axis of rotation and an oblong recess (137) opening towards said second disc (121) and extending substantially over a distance corresponding to the second
25 and third through-going cavities (129,130) in the second disc.

11. An irrigation system as claimed in any one of claims 8 to 10, in which each of said angles is substantially 90°.

- 30 12. An irrigation system as claimed in any one of claims 7 to 11, in which at least said intermediate disc (122) is formed from a resilient material.

13. An irrigation system as claimed in any one of claims 2 to 6, in which said control unit (208;308) comprises a cylindrical element (222;322) and an accommodating element (220;320) having a cylindrical aperture with dimensions corresponding substantially to the dimensions of the cylindrical element, in which
5 said cylindrical element (222;322) is rotatable about an axis of rotation (223;323) with respect to the accommodating element (220;320), and in which said cylindrical element may be set in at least said cuff inflating and liquid transferring positions, at least irrigating liquid conducting tubes connecting the control unit with the probe and the reservoir with the control unit, respectively being
10 connected with the accommodating element.

14. An irrigation system as claimed in claim 13 when dependent on claim 6, in which the accommodating element (220) in a first angular position (A10) has a first canal (226) in a first height position and a second canal (227) in a second
15 height position, in which the accommodating element in a second angular position (A20) has a third canal (228) in said first height position and a fourth canal (230) in said second height position, in which the accommodating element in a third angular position (A30) has a fifth canal (229) in a third height position, and in which the accommodating element in a fourth angular position has (A40) a
20 sixth canal (238) in said third height position, each canal extending from the periphery of the accommodating means to the substantially cylindrical aperture.

15. An irrigation system as claimed in claim 14, in which the cylindrical element (222) comprises an internal gas distribution compartment (231) having in a first
25 angular position (A11) a first passage (231a), in a second angular position (A21) a second passage (231b), in a third angular position (A31) a third passage (231c) and in a fourth angular position (A41) a fourth passage (232).

16. An irrigation system as claimed in any of claims 14 and 15, in which the
30 cylindrical element (222) comprises in said third angular position a first channel (233a) extending from substantially the axis of rotation (223) to the periphery of the cylindrical element, and a second channel (233b) extending from substantially

the axis of rotation (233) to the periphery of the cylindrical element in a fifth angular position (A51) that forms an angle with the third angular position (A31) corresponding to the angle between said first and second angular positions (A10,A20) of the accommodating element (220), said first and second channels (233a,233b) being connected with each other at the axis of rotation (223).

17. An irrigating system as claimed in any one of claims 14 to 16, in which the conduit means includes a first part connecting the control unit with the probe and a second part connecting the reservoir with the control unit, each of said first and second parts comprising a gas conducting tube and an irrigating liquid conducting tube, in which the first canal (226) is connected with the irrigating liquid conducting tube and the second canal (227) with the gas conducting tube of the first part of the conduit means, in which the third canal (228) is connected with the irrigating liquid conducting tube and the fourth canal (230) with the gas conducting tube of the second part of the conduit means, in which the fifth canal (229) is connected with the pumping means, and in which the sixth canal (238) is connected with the ambience.

18. An irrigation system as claimed in claim 13 when dependent on claim 6, in which the accommodating element (320) comprises an abutment face (320a) for a bottom face (322a) of the cylindrical element (322), in which the accommodating element (320) in a first angular position (A100) has a first canal (326), and in a second angular position a third canal (328), each of said first and third canals (326,328) extending from the periphery of the accommodating element (320) in a direction substantially towards the axis of rotation (323) to a predetermined position and from said predetermined position to the abutment face (320a), in which the accommodating element (320) along a line substantially parallel with a line extending through said first angular position (A100) has a second canal (327), and along a line substantially parallel with a line extending through said second angular position (A200) has a fourth canal (330), each of said second and fourth canals (327,330) extending from the periphery of the accommodating element (320) to a predetermined position and from said

predetermined position to the abutment face (320a), in which the accommodating element in a third angular position (A300) has a fifth canal (329) extending from the periphery of the accommodating element to the axis of rotation (323) and further on to the abutment face (320a), in which the accommodating element in a

5 fourth angular position (A400) has a sixth canal (338) extending from the periphery of the accommodating element towards the axis of rotation to a predetermined position and from that position to the abutment face (320a), and in which the cylindrical element (322) in the bottom face (322a) has a first oblong recess (340) opening towards the abutment face (320a) and having an extent

10 corresponding substantially to the distance between the first and third canals (326,328) of the accommodating element (320), and a second oblong recess (341) opening towards the abutment face (320a) and having such a configuration that, in a first position, it extends from the fourth canal (330) through the fifth and second canals (329,327) to the sixth canal (338).

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19. An irrigation system as claimed in claim 18, in which the first oblong recess (340) has a substantially curved shape.

20. An irrigation system as claimed in any one of claims 18 and 19, in which the

20 conduit means includes a first part connecting the control unit with the probe and a second part connecting the reservoir with the control unit, each of said first and second parts comprising a gas conducting tube and an irrigating liquid conducting tube, in which the first canal (326) is connected with the irrigating liquid conducting tube and the second canal (327) with the gas conducting tube

25 of the first part of the conduit means, in which the third canal (328) is connected with the irrigating liquid conducting tube and the fourth canal (330) with the gas conducting tube of the second part of the conduit means, in which the fifth canal (329) is connected with the pumping means, and in which the sixth canal (338) is connected with the ambience.

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21. An irrigation system as claimed in any one of the preceding claims, in which the pumping means is a manually operated pump, such as a bulb or a bellow

pump.

22. An irrigation system as claimed in any one of claims 1 to 20, in which the
pumping means (9) is a powered pump, such as an electrically or pneumatically
5 operated pump.

23. An irrigation system as claimed in claim 22 when dependent on claim 6, in
which said pump (9) is deactivated when the control unit (8) is set in the first
position and is activated automatically when said control unit is set in the second
10 position.

24. An irrigation system as claimed in any one of claims 21 to 23, in which the
pump is integrated with the control unit.

15 25. An irrigation system as claimed in any one of the claims 1-6, wherein the
control unit comprises three flexible tubes 401, 402, 403, the tubes being
connected to pumping means 404 at one end, the first tube 401 being connected
to a gas outlet 405, the second tube 402 being connected to the reservoir 406
and the third tube 403 being connected to the inflatable cuff 407, said tubes may
20 be individually compressed to a fluid tight position.